

REMARKS

Applicant replies to the Office Action dated June 26, 2007, within the shortened three month statutory period for reply. Claims 1-4 were pending in the application and the Examiner rejects claims 1-4. Applicant amends claim 1 and adds new claim 5. Support for the amendments and the added claim may be found in the originally-filed specification, claims, and figures. No new matter has been introduced by these amendments. Reconsideration of this application is respectfully requested.

SECTION 112 REJECTIONS

The Examiner rejects claims 1-4 under 35 U.S.C. § 112 as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicant respectfully traverses this rejection.

The Examiner asserts that claims 1-4 are indefinite because “[t]he term ‘pattern’ in claim 1 is used by the claim to mean ‘a pad, probe or terminal’, while the accepted meaning is ‘a pattern is a form, template, or model which can be used to make or to generate things or parts of a thing.’ The term is indefinite because the specification does not clearly redefine the term” (page 2 of Office Action).

Applicant respectfully asserts that the term “pattern” in circuits is well-known to one skilled in the art. In fact, whether or not the Examiner’s definition of “a pad, probe or terminal” is the correct definition for “pattern”, the Examiner has sufficiently understood the term “pattern” as used in the specification to compare Applicant’s “patterns” to the “terminals” in the cited references (cited below).

However, in order to expedite prosecution of the application, Applicant has herein amended independent claim 1 in accordance with the Examiner’s suggestion. Specifically, Applicant has deleted “pattern” and added “terminal” to the claim language. Such an amendment finds support in the specification and does not add new matter (see, e.g., FIGS. 1 and 4, and paragraphs 68 – 72). For example, paragraph 69 provides that the patterns “can be readily formed as conductive patterns,” such that it would be clear to one skilled in the art that the patterns could be terminals.

SECTION 102(e) REJECTIONS

The Examiner rejects claims 1 and 2 under 35 U.S.C. § 102(e) as being anticipated by Takano et al. U.S. Patent No. 6,114,839 (“Takano”). The Examiner also rejects claims 3 and 4 under 35 U.S.C. § 103(a) as being unpatentable over Takano in view of Darmawaskita, U.S. Patent No. 6,184,659 (“Darmawaskita”). Applicant respectfully traverses these rejections.

Applicant respectfully asserts that Takano does not disclose or suggest that “the liquid detection section controls the control section based on an impedance or resistance value detected between two electrically separated terminals” as recited in independent claim 1 (emphasis added).

1. Takano does not disclose an impedance or resistance detection between two electrically separated patterns

The Examiner asserts that “electrolyte leakage is detected” between terminal 2b and 2d in Takano. However, the Examiner does not assert that an impedance or resistance value is detected between terminal 2b and 2d. The mere existence of an impedance value between terminal 2b and 2d may or may not be disclosed in Takano due to the existence of electrolyte leakage, but nowhere does Takano disclose or suggest an actual detection of the impedance value as required by Applicant’s independent claim 1. Therefore, Takano does not disclose or suggest that “the liquid detection section controls the control section based on an impedance or resistance value detected between two electrically separated terminals,” as recited in independent claim 1 (emphasis added). The Examiner’s statement that “leakage detection via a resistance value is necessarily present” (page 6 of Office Action) is thus inapposite because it is impedance or resistance detection that the claim requires, not leakage detection. Applicant therefore respectfully requests that the Examiner cite to a specific column and line number in Takano to support the detection of impedance or resistance, and not the mere existence of an impedance or resistance value between two separated terminals.

Additionally, the Examiner asserts that, in Takano, “[e]lectrolyte leakage is detected between terminal 2b and 2d (see Taka[n]o, Figure 1) by determining if the voltage between these two terminals is an open (i.e. zero volts) or a short (i.e. not zero volts)” (page 6 of Office Action). Applicant respectfully asserts that this characterization of Takano is inaccurate. Takano states, “[i]f there is no leakage, the voltage at the terminal 2d is almost zero volts” (col. 8, lines 7-8; emphasis added). Prior to a leakage occurring, “[t]he thermistor 2a . . . conducts a

temperature detection current from the supply voltage of five volts through the resistor 91, terminals 8, 2d, 2c, and 7 to the ground” (col. 3, lines 52-55). Thus, if a current is conducted through the thermistor and through terminal 2d, a voltage must be present at the thermistor and terminal 2d, and the voltage cannot be zero at terminal 2d (otherwise there would be no “temperature detection current”).

Finally, Takano does not disclose, as suggested by the Examiner, “determining if the voltage between these two terminals [2b and 2d] is open . . . or a short.” Rather, the thermistor 2a “conducts a temperature detection current from the supply voltage of five volts through the resistor 91 . . . The temperature detection circuit 90 supplies the temperature detection signal [Vin] to the a/d converter 55” (col. 3, lines 52-58; col. 4, line 48). Thus, Takano discloses a variable temperature current measurement that changes depending on the temperature of the battery (see, e.g., Figure 5), not a binary voltage measurement that shows either an open circuit or a closed circuit, as the Examiner suggests.

2. Takano does not disclose electrically separated patterns.

The Examiner asserts that “because terminal 2b and 2d are separated by a battery (i.e., capacitors as shown in Figure 1 ‘2e’), they are electrically separated (page 6 of Office Action). Applicant respectfully submits that this statement is inaccurate. An inherent characteristic of a secondary battery is that an electrical current passes through the battery in order to recharge the battery, thus the batteries 2e cannot cause terminals 2b and 2d to be electrically separated.

Furthermore, with reference to Figure 1, Takano states, “[a] plurality of secondary batteries 2e, are connected together[,] the most positive terminal of the secondary batteries being connected to the terminal 2b, and the most negative terminal of the secondary batteries being connected to the terminal 2c” (col. 3, lines 36-40; emphasis added). Therefore, terminal 2b is electrically connected to terminal 2c via an electrical connection through secondary batteries 2e.

Takano also provides, “[a] terminal 2d is to be connected to the terminal 8, and a thermistor 2a has one end is connected to the most negative terminal of the batteries 2e, and the other end is connected to the terminal 2d” (col. 3, lines 40-43; emphasis added), and “[t]he thermistor 2a . . . conducts a temperature detection current from the supply voltage of five volts through the resistor 91, terminals 8, 2d, 2c, and 7 to the ground” (col. 3, lines 52-55). Therefore, terminal 2d is electrically connected to thermistor 2a, which is electrically connected to batteries 2e. As a result, Takano explicitly provides that terminal 2d is electrically connected to, and not

separated from, terminal 2b. Applicant therefore respectfully asserts that Takano does not disclose or suggest that “the liquid detection section controls the control section based on an impedance or resistance value detected between two electrically separated terminals” (emphasis added).

However, in order to obtain allowance of the claims, Applicant has herein amended independent claim 1 as follows: “. . . wherein the liquid detection section controls the control section based on an impedance or resistance value detected between two electrically separated patterns terminals, and wherein an amount of an electrical current flowing through each of the terminals approaches zero, unless the liquid is detected by the liquid detection section.” Such an amendment finds support in the specification as filed, for example, in paragraph 68: “in a normal state, the impedance (resistance value) between the detected pattern 72 and the B+ input/output pattern 74 is a value approaching infinity.”

As can be seen from the preceding discussion, in Takano, electrical current flows in and out of terminal 2b and in and out of terminal 2d during normal operation of the device. In fact, Takano discloses that prior to a leakage occurring, “[t]he thermistor 2a . . . conducts a temperature detection current from the supply voltage of five volts through the resistor 91, terminals 8, 2d, 2c, and 7 to the ground” (col. 3, lines 52-55; emphasis added). Therefore, a current that does not approach zero flows through each of terminals 2b and 2d before any liquid is detected between the two terminals, and Takano does not disclose “and wherein an amount of an electrical current flowing through each of the terminals approaches zero, unless the liquid is detected by the liquid detection section.”

Applicant has also herein added dependent claim 5: “A secondary battery control unit according to claim 1, wherein the electrically separated terminals are separated by a distance of about 0.1 millimeters.” Such an amendment is supported by the specification as filed (see, e.g., paragraph 68), and further distinguishes Applicant’s invention from Takano.

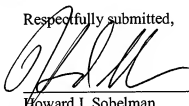
CONCLUSION

Therefore, because Takano does not disclose or suggest at least that "the liquid detection section controls the control section based on an impedance or resistance value detected between two electrically separated terminals, and wherein an electrical current does not flow through each of the terminals unless the liquid is detected by the liquid detection section," as recited in amended independent claim 1, Applicant respectfully asserts that claim 1 is allowable over Takano.

Dependent claims 2-4 variously depend from independent claim 1, so claims 2-4 are differentiated from the cited references for the same reasons as set forth above, in addition to their own respective features.

In view of the above remarks, Applicant respectfully submits that all pending claims properly set forth that which Applicant regards as its invention and are allowable over the cited references. Accordingly, Applicant respectfully requests allowance of the pending claims. The Examiner is invited to telephone the undersigned at the Examiner's convenience, if that would help further prosecution of the subject Application. The Commissioner is authorized to charge any fees due to Deposit Account No. 19-2814.

Respectfully submitted,


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